

Teaching Suggestions: Geology Activity #8

Check out the V-U!

Background Information:

Review valley formation in the Overview section. The Sierra Nevada range eroded to rolling hills before the process of uplift began the construction of a new range. A huge mass of granite rock began to rise with a westerly tilt as the continent was stretched in a lateral movement. Meandering streams became fast-flowing rivers and began to cut valleys and form canyons.

Only 1.2 million years ago, glaciers covered much of the Sierra Nevada range. This glaciation lasted 200,000 years, ending 1 million years ago, and completed the major excavation and U-shape of Yosemite Valley. Later glaciations were much smaller and did very little to further modify the valley. However, for 1 million years, weathering and erosion has sculpted the landmarks and formations of Yosemite valley, including Half Dome, Lost Arrow, and Three Brothers.

The Merced River gorge west of El Portal, outside of Yosemite Valley along Highway 140, is a good example of a V-shaped, river-cut canyon, untouched by the glaciers that filled the valley. Glacier Point is an excellent place to view U-shaped Yosemite Valley and trace the paths of the Merced and Tenaya glaciers. Lyell Canyon in Tuolumne Meadows is another excellent example of a U-shaped valley. From Olmsted Point you can view rocks polished by the Tenaya glacier. From this point, you can also easily imagine the depth of that glacier.

Concepts:

- Flowing water can carve deep, narrow canyons.
- Glaciers can form broad U-shaped glacial valleys.

Vocabulary:

glacier, uplift, V-shaped, U-shaped

If You are Taking the Virtual Hike

This activity is the same whether you are visiting the park or not. Instead of an online interaction, students are asked to form the V and U with their hands after reading the material about glaciers.

If You are Visiting the Park and Hiking the Trail

Materials:

- evolution of Yosemite Valley pictures, laminated (2,313K). (Click here to get the Adobe Acrobat Reader.)
- pictures of V- and U-shaped canyons and valleys

Site:

In view of a glacial valley, such as stop #7 on Mirror Lake Trail; Glacier Point or Olmsted Point are other good choices. Lyell Canyon in Tuolumne is also a good example of a glacial valley, but it requires a hike. If possible, take Highway 140 into or out of the park. The Merced River gorge along Highway 140 is an excellent example of a V-shaped river-cut canyon. Viewing the river-cut canyon will help to reinforce the activity.

Time:

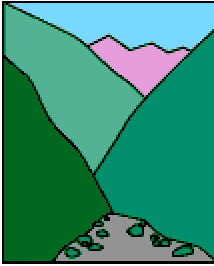
10 minutes

Activity:

Tell the students they will be “VU”ing a valley. Choose a place to “VU” where a U-shaped valley is easy to view. View the U-shaped valley and review how glaciers erode V-shaped river canyons as they pass through. Use the Evolution of Yosemite Valley pictures to show the transformation from a V-shaped river-cut canyon to a U-shaped glacial-eroded valley.

While you view the V-shaped river canyon, reinforce the concept by having students make a V-shape with the base of the palms of their hands. When you view the U-shaped glacier eroded valley, have the students place their chins into their V-shaped hands to represent the passage of the glacier.

V-Shaped Canyon



U-Shaped Valley

